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SYSTEM AND METHOD FOR USING AN ORDINARY
ARTICLE OF COMMERCE TO ACCESS A REMOTE COMPUTER

Related Application Data

10 This application is a continuation-in-part of
Application Serial Number 60\000,442, filed on June 20,
1995, and entitled "Method and Apparatus for Interfacing
with Remote Computers" (hereinafter, "our copending
application"), the disclosure of which is hereby
15 incorporated by reference in its entirety.

Field of the Invention

 This invention relates to computer communications
generally, and more specifically to techniques for giving
20 users convenient access to information located on computer
networks such as the Internet.

Background of the Invention

 A computer network is a set of computers (or "hosts")
25 which are able to communicate electronically. In logical
terms, the network can be viewed as a set of nodes or
"sites", with each computer on the network being home for
one or more nodes. Generally speaking, each host is
assigned a numeric address, which the network uses to route
30 information to that particular host. To facilitate human
use of networks, addresses are often given alphanumeric
codes (or "mnemonics"), which are easier for people to
remember. For example, the numeric address 200.98.322.56
may be assigned the mnemonic "sample.com."

35 At the present time, the world's most important network
is the Internet. The Internet is a massive worldwide
collection of computer resources, connected together in
network fashion by a series of communication protocols known

as TCP/IP. Many sites on the Internet can be accessed in accordance with popular standard protocols or formats such as Gopher and Hypertext Transport Protocol ("HTTP"). These sites act as remote servers, providing information to users' computers (or "clients") in accordance with a particular format or protocol. The client system (often an individual's personal computer) must have the necessary software to handle the server's particular protocol.

For example, sites set up in accordance with HTTP are nicknamed "Web sites". If a user wants to access Web sites, she must have a computer connected to the Internet and equipped with software for communicating in accordance with the HTTP protocol. Such software is often called a "browser," because it allows users to browse (or, in the parlance of the enthusiasts, "surf") from Web site to Web site, much the way one might browse through a library. This process is facilitated by the fact that most Web sites have hypertext links to other Web sites, which the user can activate by clicking a mouse on a highlighted portion of the screen.

Typical browser software also maintains a list of sites the user has visited, which the user can recall using commands such as "back" and "forward." These commands, coupled with the hypertext links between Web sites, give users the sensation of "navigating" through a seemingly infinite realm of information, which is popularly referred to as "cyberspace" or the "World Wide Web."

Users can also specify a Web site by manually typing in the site's location as a Uniform Resource Locator ("URL"). The URL specifies the precise location of a particular resource, and has three fields:

<resource type> <domain name> <path>

Domain name, as explained above, is the alphanumeric network address of the host on which a particular resource resides.

The "path" is the specific directory and file on the host

where a resource is stored. A typical URL is
`http://bongo.cc.utexas.edu/~neural/cwsapps.html`.

For example, the command "Go <URL>" would cause browser software to request the information residing at the site
5 specified by the URL. This is called "pointing" the browser to the desired Web site. The Web server at the designated URL processes the browser's request by transferring a copy of the file specified by the URL to the user's local host computer. The transferred file includes embedded commands
10 in the hypertext markup language ("HTML"), which cause the client's browser software to display and handle the transferred file in a desired manner.

Cyberspace is not limited to the World Wide Web or the Internet. Massive amounts of information are also available
15 on networks maintained by on-line service providers under the service marks CompuServe, Prodigy and America Online, for example. Users typically access these on-line services via telephone modem connection. To the end user, these networks appear to be a series of sites or locations or
20 "rooms" offering various types of information. The addresses for these locations are assigned by the on-line service providers. Navigation among these locations is handled by proprietary client software, which runs on the user's personal computer.

25 Many users learn of resources on the Internet or a proprietary on-line service through magazine articles and advertisements. These articles and advertisements include the necessary URL or other network address to access the desired site. Many publications compile lists of sites they
30 deem particularly worthwhile. When a user sees a listing for a site which looks interesting, he can manually enter the published URL or other mnemonic address into his browser or other software, and access the site.

As explained in our copending application, we realized
35 that published computer addresses -- whether URLs or otherwise -- were difficult for people to use because they

have to be tediously entered into their computers. A good example of an address which may be difficult to enter is the University of Texas address cited above. The problem is particularly acute for persons with a visual or physical
5 disability.

Another problem using the Internet, we realized, is that many users have trouble even finding URLs or other network addresses for desired sites such as Web pages. Accordingly, Web site sponsors publish their Web site URLs
10 in print advertising and on packaging. The difficulty with this approach however is that the URLs are still long, and cumbersome to remember and enter into a computer.

In our copending application, we proposed to resolve these problems by allowing people to access published
15 locations without having to manually enter the published address. In accordance with one embodiment of the invention, the mnemonic address or verbal description of a network location is published along with the location's numeric address in bar code format. The user's computer is
20 equipped with a bar code reader and browser software. The bar code reader is suitably interfaced to the computer's browser software to allow bar code input to be accepted as address information. When the user sees an interesting published address, he scans the associated bar code using
25 the bar code reader, thereby loading the desired numeric address into the browser. The browser then accesses the Web or other site corresponding to that numeric address.

We are finding several problems with this and other approaches that have been tried. First, some URLs and other
30 network addresses contain upwards of 20-30 characters, and therefore require very long bar code symbols, which can clutter advertising and packages, and may not be practical from either an esthetic or technical perspective. Second, placing URLs on printed material (whether or not in bar code
35 format) requires manufacturers to redesign products, packaging and/or advertisements, and many manufacturers may

be reluctant to do this. Third, pervious proposal, if the network address is changed, the package needs to be redesigned, and packages already in the marketplace will have incorrect address information.

5

Summary of the Invention

The present invention offers a better way for consumers and others to access resources on remote computers, particularly Web sites. In accordance with the invention,
10 the dissemination and entry of network addresses is accomplished by means of existing identification standards (e.g., bar codes) found on ordinary products like soup or soda, in conjunction with a centralized database of network locations.

15 One embodiment of the invention is a system in which a bar code or other indicia is associated with a product or other article of commerce. The indicia encodes (in human and/or machine-readable form) a UPC or other identification number, which is associated with the article in accordance
20 with an extrinsic standard. A computer database is provided that relates standard UPC codes to Internet URLs or other network addresses. To access a network resource relating to a particular product, the user swipes a bar code reader across the product's UPC symbol. The database then retrieves
25 the URL corresponding to the UPC product data. This location information is then used to access the desired resource on the network.

The invention offers a number of important advantages. First, because product identification information is already
30 widely disseminated using standardized and pre-assigned codes, the invention eliminates the need for separately disseminating domain names or other network location data. Further, the invention can be implemented without requiring manufactures to redesign packaging or other articles, or to
35 develop special bar code indicia. This overcomes a Catch-22 often facing new technologies: manufacturers will not

participate until there is widespread consumer interest;
consumers are not interested until there is widespread
manufacturer participation. With the invention, mass
participation by manufacturers in the technology is
5 automatic.

Second, the invention allows practical use of bar codes
and other machine readable media for entry of network
location data. As we realized, encoding URL data in bar
code format is not practical because the resulting bar codes
10 are too long. By using existing UPC product codes in
combination with the database of network locations, users
have the benefit of bar code or comparable technology for
entering network location data. Thus, the necessity of
manually entering the address is eliminated. Users can
15 access a desired site by simply using a bar code reader.
The UPC can also be printed on removable stickers or
detachable cards, allowing users to readily clip the
stickers and cards for future reference. This is
particularly useful when the user reads about the location
20 at a time when he does not have access to a computer.

Third, the invention overcomes the problems encountered
when network addresses are changed. Network addresses can
change as companies reorganize their on-line marketing
strategies. Also, Internet addresses are assigned by an
25 independent third party -- InterNic -- which may in some
cases have the authority to unilaterally change a company's
address. Finally, unforeseen trademark conflicts (involving
for example Internet domain names) may require adoption of
new addresses. With the invention, a new address assignment
30 requires only that the database of addresses be updated.
Products, packaging, advertisements and the like bearing the
standard identification codes need not be redesigned.

Brief Description of the Drawings

FIG. 1 is a block diagram of a computerized system for interfacing with a computer network in accordance with the invention.

FIG. 2 is a perspective view of the local host computer shown in FIG. 1.

FIG. 3 is an enlarged view of the article of commerce shown in FIG. 1, illustrating in detail the UPC symbol thereupon.

FIG. 4 is a tabular view of the database shown in FIG. 1.

FIG. 5 is a flow chart illustrating the operation of the system of FIG. 1 in accordance with the invention.

FIG. 6 is an idealized view of the CRT screen of the client system of FIG. 1 displaying information in accordance with the invention.

FIG. 7 is a perspective view of articles of commerce which can be used in accordance with the invention to access remote computers.

Detailed Description of the Preferred Embodiment

1. Overview

FIG. 1 is a block diagram illustrating one application of the invention, namely the use of an ordinary article of commerce to access sites on the Internet's World Wide Web. As explained below, this embodiment of the invention allows a person who desires Internet resources concerning a particular product to access those resources using the product's UPC symbol. The data encoded on the UPC symbol can be entered manually or (for greater convenience) using a bar code reader.

Referring to FIG. 1, the Internet 20, illustrated here in generalized format, includes a service provider 22 and two remote nodes 24 and 26. In this case, service provider

22 is a local Internet access provider. Service provider could also be an online service provider, such as America. OnLine[®] , CompuServe[®] , Microsoft[®] Network and Prodigy[®]. In such cases, local host 28 need not be on Internet 20 -- that is, need not have a network address.

An end-user (not shown) accesses Internet 20 using local host 28, which in this case is an IBM compatible personal computer including a CPU 30, a random access memory 32 and an address/data bus 34 by operatively connecting CPU 30 and memory 32. Unless otherwise specified, the term "memory" herein includes any storage device, including RAM, ROM, tape or disk drives (or collections or networks of tapes or disk drives), and any other device for storing information. A modem 36 and I/O port 38 are attached to bus 34 by a suitable interfaces 40 and 42, respectively. An input device 44 is connected to bus 34 via I/O port 38. Input device 44 is a commercially available wand-style bar code reader reads a Uniform Product Code ("UPC") bar code symbol 46 affixed to an article of commerce 48. Alternatively, input device 44 could be a card reader, optical character or voice recognition system, touch screen, scanner, pen, keyboard or other known input device.

Local host computer 28 need not be a personal computer, and could for example be a mainframe or minicomputer having a terminal by which the user could enter and receive data. In that arrangement, input device 44 would be attached to the terminal.

Modem 36 is adopted for electronic communication via a suitable telephone link 50 with service provider 22. Computer 28 functions as an Internet host because it is connected to service provider 22 using Point to Point Protocol ("PPP") via telephone link 50. Other telecommunications channels may be used, such as ISDN or a connection which incorporates a third party intermediary network such as TymNetSM. Alternatively, local host 28 could be connected directly to Internet 20, as is likely to

be the case where local host 28 is a larger computer, such as mainframe. FIG. 2 offers a perspective view of local host 28 and article of commerce 48 and also illustrates a CRT monitor 52 and keyboard 54 suitably coupled to bus 34.

5 In this illustration, local host 28 is used to access Internet resources (or "Web sites") on remote nodes 24 and 26, which are available using the HTTP protocol. HTTP uses a client-server architecture, with remote nodes 24 and 26 acting as servers, and local host 28 acting as a client.
10 Local host is equipped with Netscape Navigator brand Web browser software which enables it to function as an HTTP client.

Remote nodes 24 and 26 have pre-assigned network locations (or "domain names"), and desired resources (such
15 as a particular Web site) are located in specific directories and files (or "paths") resident on a remote nodes 26 and 28. The precise locations of those resources are specified using URL, which, as explained above, includes three fields: <resource type> <domain name> <path>. To
20 access resources of a particular remote node 24 or 26, local host 28 requests those resources from Internet 20 using the appropriate URL. Thus, the URL functions as a more precise kind of network address than a domain name.

The URL required is often supplied by the user. Users
25 learn about the existence of a desired resource (and its corresponding URL) through a variety of means, including publication in a printed advertisement. In current practice, the URL acquired from a printed source must be entered using a keyboard. As explained above, this can be
30 tedious. Moreover, in many cases, users may have trouble finding references to desired Web pages.

2. Article of Commerce

In accordance with the invention, access to desired resources on remote nodes 24 and 26 is achieved using an
35 article of commerce 48. The term "article of commerce"

includes tangible things that are sold or moved through commerce, such as consumer products, packaging, and printed media including books, newspapers, magazines, stickers, fliers, cards, tags and labels. Article 48 bears a standard
5 UPC bar code symbol or indicia 46. Symbol 46 is shown in greater detail in FIG. 3, and may be affixed to article 48 in any suitable manner, including printing directly on the article or its packaging, or applied to labels or tags attached or otherwise affixed to the article. In accordance
10 with UPC standards, symbol 46 encodes a ten-digit number (the "product identification number"). As shown in FIG. 3, the product identification number encoded in UPC symbol 46 consists of two five-digit fields, A and B. Field A is a unique, pre-assigned number signifying a particular
15 manufacturer. Field B is a number identifying one of the manufacturer's products. In the United States, UPC product identification numbers are assigned by the Uniform Code Council, Inc.

UPC symbol 46 provides a machine-readable number that
20 uniquely identifies a particular product and its manufacturer. This is useful at the retail point-of-sale, where purchase of a particular item is recorded by scanning the item's bar code symbol.

There are numerous other formats and systems for
25 assigning product identification numbers to articles of commerce. For example, the International Article Numbering Association ("EAN") assigns its own number to products outside of the U.S. and Canada, and uses a different symbology than used with the UPC. Product identification
30 codes for books are provided by the International Standard Book Numbering System ("ISBN") and are encoded using a symbology specified by that organization. Likewise, magazines and serial publications are assigned product identification codes by the International Standard Serial
35 Numbering System ("ISSN").

These numbering systems share at least three characteristics. First, for purposes of this invention, the identification numbers may be assigned in accordance with an "extrinsic" standard. By extrinsic, it is meant that the assignment of numbers is made a by group or association for the purpose of identifying articles of commerce. It is likely that new types of identification numbers will arise in the future, as will new organizations for assigning and administering those numbers, and the present invention contemplates use of both existing and future extrinsic identification numbers and formats.

Second, the identification numbers may have recognized significance as numbers identifying articles of commerce. The level of recognition may be among the general public, or a defined subset, such as a particular industry or occupation.

Third, the identification numbers may be encoded in a standard, machine readable format -- namely, bar codes. Other machine readable formats may also be used for this purpose, including magnetic stripes or optical character recognition ("OCR"), and the present invention could be practiced with product identification numbers encoded in those formats as well.

3. URL/UPC Database

In accordance with the invention, service provider 22 includes a relational database 60, which is shown in more detail in FIG. 4. Database 60 includes records 62-68, which are accessible using a suitable database management system software. Each record 62-68 of database 60 contains four fields 70-76. Fields 70 and 72 contain a UPC product identification number, as explained below. Field 74 holds a URL suitable for locating a resource on the Internet. Depending on the application, other network addresses -- either numeric or mnemonic, physical or virtual -- may be used. Field 76 holds a narrative description of the

resource addressed in field 74. This particular arrangement of fields is but one illustration of how the invention may be practiced. For example, additional fields could be provided, or the UPC product identification number could be
5 held in a single field.

Each record 62-68 of database 60 associates a UPC product identification number (contained in fields 70 and 72) with a particular Internet URL and narrative description (contained in fields 74 and 76, respectively). The
10 association is based on selected criteria. In this case, the criteria is the existence of a Web resource sponsored by the manufacturer of the product identified by the UPC number in fields 70 and 72. (If no such resource exists, then the particular product identifier can be omitted from database
15 60). Other criteria can be used. For example, the association could be based on the existence of a Web site simply referring to or relating to the product.

As stated, fields 70 and 72 contain a UPC product identification number. Field 70 contains the first five
20 digits of the product identification number (field A of FIG. 3). As explained above, these digits uniquely identify the product's manufacturer. Field 72 contains the second five digits of the product identification number (field B of FIG. 3). These digits identify the manufacturer's particular
25 product. In some cases, a manufacturer may have many products and only one Web site or other Internet resource. In that case, field 72 may be left blank, as shown in cell 78 of record 68. When field 72 is left blank, database 60 associates the Web resource indicated in field 74 with any
30 product identification number whose first five digits match the manufacturer number specified in field 70.

Database 60 itself is accessible via service provider 22, which is equipped with Web server software such as provided by Netscape Communications, Inc. The server
35 software provides access to an HTML document (the "Query Page") resident on service provider 22 at a predetermined

URL. The Query Page, when displayed on CRT 52 by local host 28 using a forms-capable browser allows the user to enter a query in the form of a UPC product identification number. Alternatively, database 60 could be resident on local host 28 or another remote computer 24 or 26. The Web server at service provider 22 may have a predetermined URL location. Browser software resident in local host computer 28 may be configured to automatically request that predetermined URL location when the browser software is initially loaded.

Database 60 may be incorporated with a database or search engine of Web sites or other Internet resources (such as the Yahoo or Lycos databases). In that case, the Query Page may give the user the option of entering a UPC number or an alternative search term, such as a portion of the URL or the topic to which the desired resource pertains.

Also, database 60 may be divided into one or more tables, which may be distributed over more than one computer. For example, a first table may contain records associating UPC numbers with names of products or manufacturers. A second table associates products and/or manufacturer names with Internet addresses. Thus, the process of using the UPC number to locate a network address may involve one or more steps. For example, database 60 might determine the name of a product corresponding to a UPC number using a first table, and then determine network addresses corresponding to that product name using a second table. Even though multiple steps are involved, the UPC number is still "associated" in computer memory with the network address for purposes of the invention.

30

4. Operation of the Invention

Suppose a user is interested in Internet resources concerning a particular type of product. In accordance with the invention, the user can access those resources by taking an ordinary specimen of the product -- a can of soup for

example -- and entering all or part of the product's UPC product identification number 46. Database 60 uses the entered product identification number to look-up the associated URL, which is returned to the user in the form of a HTML document.

This operation is illustrated in FIG. 5. At a block 80, the user loads his browser software onto local host computer 28. The browser software is programmed to automatically load the "Query Page" which provides access to database 60. The user in this case is a human, but alternatively a program (or "process") running on local host 28 could be the "user" in the sense that it is the process which is requesting information from the Internet and supplying the UPC number.

At a block 82, the Query Page is transmitted to local host computer 28 in the form of an HTML document. Browser software resident on local host 28 displays the Query Page on CRT screen 52. At block 84, the user (or process) enters the first five or all ten digits of the UPC product identification number encoded by symbol 46. Because the UPC product identification number is printed in both machine- and human-readable format (See FIG. 3), this may be done by manual entry using keyboard, voice recognition system or other input device. More preferably, however, entry is accomplished by scanning UPC symbol 46 affixed to article 48. Input device 44 reads UPC symbol 46, and generates an ASCII character string which is read by CPU 30 via I/O port 38. If the UPC number is scanned, then all 10 digits will generally be entered. The UPC product identification number is transmitted to the Web server resident on local service provider 22, which at a block 86 looks up the entered UPC number in database 60.

At block 88, database 60 retrieves all records 62-68 having UPC fields 70 and 72 that match the product identification number entered by the user. The records are conveyed to the user in the form of an HTML document. The

criteria at block 88 for whether UPC fields 70 and 72
"match" the product identification number may be based on a
"query by example" approach. For example, suppose at block
84 the user only enters the manufacturer portion (e.g.
5 "31251") of a product identification number. It is assumed
in this case that the user is interested in any record 62-68
having a field 70 that matches the entered manufacturer
portion. (Recall that the database 60 stores the UPC number
in two fields -- field 70 for the first five digits
10 (corresponding to manufacturer) and field 72 for the second
five digits (corresponding to manufacturer's product)).
Thus, at block 88, records 61, 64 and 65 are returned to the
user, because field 70 in each of those records contains
"31251."

15 If the user entered all ten digits of a UPC product
identification number(e.g., "31251-00302"), then only
records whose fields 70 and 72 matched "31251" and "00302,"
respectively, would be retrieved. (In this case, that would
be record 64). If all ten UPC digits are entered, and no
20 exact match is found, database 60 may be programmed to
retrieve records (if any) where at least the manufacturer
portion (that is, first five digits) matches field 70.

At block 90, browser software on local host computer 28
displays records retrieved at block 88 on CRT 52. The
25 records are returned in an HTML document, which is displayed
by the browser in a screen format 94, as illustrated in FIG.
6. In this example, records 62, 64 and 66 have been
retrieved. Screen format 94 displays data from each record
in a separate rows 96, 98 and 100, respectively. If no
30 matching records are found at block 88, a message such as
"no records found" may be returned instead.

Text from description field 76 of each of records 62,
64 and 66 is displayed as hypertext links 102, 104 and 106,
respectively. Link 102 is associated with the URL of record
35 62, link 104 with the URL of record 64, and link 106 with
the URL of record 66. When the user selects one of links

102-106 (by mouse click or otherwise), the browser software loads the URL associated with the selected link to access the resource at the location specified by that URL.

5. Alternative Embodiments

5

The foregoing embodiment is just one example of the present invention. Many alternatives are possible.

Other Networks and Protocols. While the present invention is illustrated with respect to a system for
10 accessing the Internet's World Wide Web, it could be practiced using other Internet protocols (such as Gopher) or other types of wide area networks and systems, including those offered by "on-line service" providers such as America
15 OnLine® of Fairfax, Virginia or CompuServe® of Columbus, Ohio or the Microsoft® Network of Redmond, Washington.

In those cases, database 60 could be resident on the on-line service provider's computer. The network address information contained in database 60 could be either
20 Internet URLs, or locations within the on-line service provider's environment. In this case, the protocol used to communicate between local host 28 and service provider 22 need not be HTTP or other Internet protocol. However, service provider 22 can provide a gateway to Internet 20, and access to a desired network location on the Internet can
25 be made using a URL retrieved from database 60.

Controlled Access. Database 60 need not be publicly accessible. Access to database 60 can be limited either by placing database 60 on a proprietary network, or, if placed on an open network, using a password or digital signature
30 system to permit access only to authorized persons. Also, records 62-68 may be selectively accessible. For example, each record can contain an additional field indicating whether the URL contained in field 74 points to network location containing material inappropriate for children. In
35 that case, database 60 can be programmed to return URL at block 88 only if the user has supplied a proper password.

Automatic Jumping to Desired Location. In the disclosed embodiment, the URL associated with a selected UPC product identification code is returned to the end user in an HTML document at block 88 of FIG. 5. The user can then
5 hypertext link to the site corresponding to the URL. Alternatively, instead of displaying query results at step 90 (of FIG. 5), browser software in local host can automatically load the retrieved URL and point the user to the site corresponding to that URL. An additional field in
10 database 60 can provide a code indicating whether this feature should be enabled or disabled for a particular URL.

Identification Numbers and Symbologies. The invention can be practiced using standard identification numbers and symbologies other than UPC numbers and formats. For
15 example, EAN, ISBN and ISSN numbers and formats discussed above could be used.

Articles of Commerce. As shown in FIG. 7, product identification numbers -- whether bar coded or otherwise -- may be placed all types of items, such as a consumer product
20 102, newspaper 104 or book 106, as well as coupons, fliers, cards and advertisements (not illustrated). For example, by placing a product's UPC code on an advertisement for the product, the advertiser could, in accordance with the invention, facilitate access to Internet resources
25 concerning the product.

Machine Reading Technology. In lieu of a bar coding, the invention could be practiced with product identification information that is encoded using other technologies. For example, product identification information could be encoded
30 on a magnetic strip affixed to a product, card or other article. In place of wand, local host computer could use a magnetic card reader. Alternatively, the number could simply be printed in human-readable format, and an optional optical character recognition system could be used to
35 facilitate entry.

Direct Coding of Address. In place of a standard UPC symbol, bar code technology could be used to encode the actual mnemonic or numeric (IP) network address in machine-readable format. While this arrangement does not achieve all
5 the advantages of the invention, it allows the user to easily enter desired address information using a bar-code reader instead of manually typing the address.